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EXAMINER	
NOGUEROLA, ALEXANDER STEPHAN	
ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,979	SIBBETT, SCOTT	
	Examiner	Art Unit	
	ALEX NOGUEROLA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-11 and 13-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-11 and 13-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 November 2008* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawing was received on November 04, 2008. This drawing is not accepted. Applicant states, in regard to replacement Figure 4, "… the arrows were in error as being shown only in one direction, rather than being bi-directional as per the embodiments disclosed in the specification. Applicant further notes that the relative potentials are indicated in the figure and that the flow of charged particles is governed by the laws of physics." See page 10 of the Amendment of November 04, 2008. The bidirectional arrows in the figure are associated with flow direction, not flow of charged species. How can fluid flow in two directions at once? Also, because of the indicated relative voltages (130, 128, 126a, and 126b) in the wells or along the channel there is an implied single fluid flow direction (and flow of charged species) in each channel segment. Thus, the bidirectional arrows reflect violations of the laws of physics and are new matter.

Response to Amendment

2. Applicant's amendment of November 04, 2008 ("Amendment") does not render the application allowable.

Status of the Rejections pending since the Office action of August 04, 2008

3. All previous rejections are withdrawn.

Response to Arguments

4. Applicant's arguments filed November 04, 2008 have been fully considered but they are not persuasive. Applicant has amended claims 1, 11, 19, and 22 by replacing "fluid flow" with -- convective flow --. The claims have now reverted to the same state as presented in the Amendment of October 31, 2007. Applicant asserts, "If microchannel 122 is coated with a coating that suppresses electroosmosis, there will be a *positive pressure at the "T" junction* 124 which results in some fluid flowing toward

reservoir 112. That is, in the first embodiment, convective flow is generated reservoir 112." See Amendment page 11. "In the second embodiment, microchannel 120 is coated with an electroosmotic suppressant … Basically, the *negative pressure at "T" junction* 124 sucks fluid from reservoirs 112 toward reservoir 116." See Amendment page 11, bridging to page 12. Even of these explanations of convective flow are plausible and are not indirectly new matter they render the claims unenabled as discussed in the rejection under 35 U.S.C. 112, first paragraph, below.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-3, 5-11, and 13-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Independent claims 1 and 11 require "... wherein a voltage drop between the first and second pump electrodes causes electrosoosmotic flow in the first and second pump channels and convective flow in the particle separation channel. [emphasis added]" However, Applicant asserts, "If microchannel 122 is coated with a coating that suppresses electroosmosis, there will be a *positive pressure at the "T" junction* 124 which results in some fluid flowing toward reservoir 112. That is, in the first embodiment, convective flow is generated reservoir 112." See Amendment page 11. "In the second embodiment, microchannel 120 is coated with an electroosmotic suppressant … Basically, the *negative pressure at "T" junction* 124 sucks fluid from reservoirs 112 toward reservoir 116. [underlined emphasis added]" See Amendment page 11, bridging to page 12. So the explanation of how convective flow is to be produced is inconsistent with claims 1 and 11 and the claims depending therefrom because claims 1 and 11 do not, indeed none of the claims, require suppressed electroosmotic flow in any channel. In fact, they require electroososmotic flow in both pump channels. By Applicant's own description of the invention in the Amendment the invention of claims 1 and 11 and the claims depending therefrom would not work as intended and so are not enabled.

Independent claim 19 requires "an electroosomotic pump in communication with the particle separating channel at the first end, the electroosmotic pump creating convective flow in the particle separating channel to move solution against the voltage gradient [along the particle separating channel created by the first electrode and the second electrode]." One with ordinary skill in the art at the time of the invention would

expect the voltage gradient along the particle separating channel to also create electroosmotic flow. Since the claim uses the phrase "… to move solution against the voltage gradient" this electroosmotic flow is against any convective flow along the particle separating channel and so convective flow should be negligible along the particle separating channel and more significant, if it occurs as described in the Amendment, along a channel associated with the electroosmotic pump, such as channel 122 in Figure 4.

Moreover, it is not clear why there would not just be electroosmotic flow, without convective flow, along the particle separating channel. Referring to Figure 4, if as described by Applicant the electroosmotic pump in one embodiment requires channel 122 to have suppressed electroosmotic flow and as according to claim 19 electrodes along the particle separating channel (118) each have a voltage applied to them, along with electrodes 130 and 128, then there should be a continuous electrical field along channels 122, 120, and 118. In this case electroosmotic flow would be expected to flow from electrode 128 to electrode 126a and then electrode 126b. In the alternative embodiment described in the Amendment wherein the channel 120 has suppressed electroosmotic flow one would expect electroosmotic flow along channels 122 and 118. In other words, the invention of claim 19 in light of Applicant's Amendment would produce a second electroosmotic flow opposing and overwhelming the convective flow or just electroosmotic flow along the particle separating channel.

The enablement problems for claims 19-21 similarly apply to claims 22-25. The particle separation channel presumably does not have electroosmotic suppression

(none is claimed or otherwise disclosed. Also note Figures 1 and 3a-3b, where the white region represents suppressed electroosmotic flow, specification [0018]) so it should have an electroosmotic flow in opposition to the convective flow or there should just be electroosmotic flow therein continuous with electroosmotic flow along whichever channel in the electroosmotic pump does not have electroosmotic suppression. Another why of stating the last point is to ask how the voltage at electrode 126b or 126a is isolated from the voltage at electrode 128, especially when Figure 4 shows electrode 126a having an intermediate voltage (++) between that of electrode 128(+) (or 130(-)) and electrode 126b (+++)?

Last, Applicant's explanations of convective flow in the Amendment is inconsistent with paragraph [0018] in the specification. Although Applicant's explanations of convective flow in the Amendment refers to Figure 4 and paragraph [0018] in the specification refers to Figure 1 they are related because both concern creating convective flow at a "T" junction. According to Applicant's explanations of convective flow in the Amendment, in one embodiment "If micro channel 122 is coated with a coating that suppresses electroosmosis, there will be a *positive pressure at the "T" junction* 124 which results in some fluid flowing toward reservoir 112. That is, in the first embodiment, convective flow is generated toward reservoir 112." Microchannel 122 in Figure 4 corresponds to microchannel 22 in Figure 1 and reservoir 112 in Figure 4 corresponds to reservoir 12 in Figure 1. In contrast, paragraph [0018] of the specification states, "Due to suppressed elecroosmotic flow in channel 22 relative to channel 20, the unsuppressed electroosmotic flow in channel 20 creates a negative

pressure in channel 18 as demanded by the equation continuity. In turn, the pressure results in the convective pumping of electrolyte in channel 18 from reservoir 12 toward reservoir 16. [emphasis added]" Thus, the description in the Applicant's amendment is arguably contradictory, not just inconsistent, with the description in paragraph [0018] of the specification as one explanation requires positive pressure at the "T" junction the other requires negative pressure, and one explanation requires convective flow in the opposite direction than the other explanation.

For the reasons set forth above, even if the explanations provided in the Amendment on how convective flow is to be produced are plausible and not indirect new matter they render the claims not enabled because they at inconsistent with the claimed invention and the descriptions or figures provide in the original disclosure.

Final Rejection

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

/Alex Noguerola/

Primary Examiner, Art Unit 1795

January 13, 2009